CLAIMS

WHAT IS CLAIMED IS:

1. An isolated nucleic acid comprising at least 10 contiguous nucleotides of a sequence selected from the group consisting of the polynucleotide sequences hR07-001 through hR07-128 shown in Tables 1-128, or its complement.

2. A host cell comprising a recombinant nucleic acid of claim 1.

3. An expression vector comprising the isolated nucleic acid according to claim 1.

4. A host cell comprising the expression vector of claim 3.

5. The polynucleotide according to claim 1, wherein said polynucleotide, or its complement or a fragment thereof, further comprises a detectable label.

6. The polynucleotide according to claim 1, wherein said polynucleotide, or its complement or a fragment thereof, is attached to a solid support.

7. The polynucleotide according to claim 1, wherein said polynucleotide, or its complement or a fragment thereof, is prepared at least in part by chemical synthesis.

8. The polynucleotide according to claim 1, wherein said polynucleotide, or its complement or a fragment thereof, is an antisense fragment.

9. The polynucleotide according to claim 1, wherein said polynucleotide, or its complement or a fragment thereof, is single stranded.

10. The polynucleotide according to claim 1, wherein said polynucleotide, or its complement or a fragment thereof, is double stranded.

11. The polynucleotide according to claim 1, comprising at least 15 contiguous nucleotides.

12. The polynucleotide according to claim 1, comprising at least 20 contiguous nucleotides.

13. A microarray for detecting a cancer associated (CA) nucleic acid comprising:

at least one probe comprising at least 10 contiguous nucleotides of a sequence selected from the group consisting of the polynucleotide sequences hR07-001 through hR07-128 shown in Tables 1-128, or its complement.

14. The microarray according to claim 13, comprising at least 15 contiguous nucleotides.

15. The microarray according to claim 13, comprising at least 20 contiguous nucleotides.

16. An isolated polypeptide, encoded within an open reading frame of a CA sequence selected from the group consisting of the polynucleotide sequences hD07-001 through hD07-128 shown in Tables 1-128, or its complement.

17. The polypeptide of claim 16, wherein said polypeptide comprises the amino acid sequence encoded by a polynucleotide selected from the group consisting of hR07-001 through hR07-128 shown in Tables 1-128.

18. The polypeptide of claim 16, wherein said polypeptide comprises the amino acid sequence encoded by a polypeptide selected from the group consisting of hP07-001 through hP07-128 shown in Tables 1-128.

19. The polypeptide of claim 16, wherein said polypeptide comprises the amino acid sequence of an epitope of the amino acid sequence of a CA polypeptide selected from the group consisting of hP07-001 through hP07-128 shown in Tables 1-128.

20. The polypeptide of claim 16, wherein said polypeptide or fragment thereof is attached to a solid support.

21. An isolated antibody or antigen binding fragment thereof, that binds to a polypeptide according to anyone of claims 16-20.

22. The isolated antibody or antigen binding fragment thereof according the claim 21, wherein said antibody or fragment thereof is attached to a solid support.

23. The isolated antibody or antigen binding fragment thereof according the claim 21, wherein said antibody is a monoclonal antibody.

24. The isolated antibody or antigen binding fragment thereof according the claim 21, wherein said antibody is a polyclonal antibody.

25. The isolated antibody or antigen binding fragment thereof according the claim 21, wherein said antibody or fragment thereof further comprises a detectable label.

26. An isolated antibody that binds to a polypeptide, or antigen binding fragment thereof, according to any of claims 16-20, prepared by a method comprising the following

steps of: (i) immunizing a host animal with a composition comprising said polypeptide, or antigen binding fragment thereof, and ii) collecting cells from said host expressing antibodies against the antigen or antigen binding fragment thereof.

27. A kit for diagnosing the presence of cancer in a test sample, said kit comprising at least one polynucleotide that selectively hybridizes to a CA polynucleotide sequence selected from the group consisting of the polynucleotide sequences hD07-001 through hD07-128 shown in Tables 1-128, a fragment thereof, or their complement.

28. A kit for diagnosing the presence of cancer in a test sample, said kit comprising at least one polynucleotide that selectively hybridizes to the sequence of a polynucleotide sequence selected from the group consisting of the polynucleotide sequences hR07-001 through hR07-128 shown in Tables 1-128, a fragment thereof, or their complement.

29. An electronic library comprising a polynucleotide, or fragment thereof, comprising a CA polynucleotide sequence selected from the group consisting of the polynucleotide sequences hD07-001 through hD07-128 shown in Tables 1-128.

30. An electronic library comprising a polynucleotide, or fragment thereof, comprising a CA polynucleotide sequence selected from the group consisting of the polynucleotide sequences hR07-001 through hR07-128 shown in Tables 1-128.

31. An electronic library comprising a polypeptide, or fragment thereof, comprising a CA polypeptide sequence selected from the group consisting of the polynucleotide sequences hP07-001 through hP07-128 shown in Tables 1-128.

32. A method for screening for anticancer activity in a potential drug, the method comprising:

(a) providing a cell that expresses a cancer associated (CA) gene encoded by a nucleic acid sequence selected from the group consisting of the sequences hD07-001 through hD07-128 shown in Tables 1-128 or fragment thereof;

(b) contacting a tissue sample derived from a cancer cell with an anticancer drug candidate; and

(c) monitoring an effect of the anticancer drug candidate on an expression of the CA gene in the tissue sample.

33. The method of screening for anticancer activity according to claim 32, wherein the CA gene comprises at least one nucleic acid sequence selected from the group consisting of the sequences hR07-001 through hR07-128.

34. The method of screening for anticancer activity according to claim 32, further comprising:

(d) comparing the level of expression of the in the absence of said drug candidate to the level of expression in the presence of the drug candidate.

35. The method of screening for anticancer activity according to claim 33, wherein the drug candidate is an inhibitor of transcription and further wherein the nucleic acid sequence is selected from the group consisting of hR07-021, hR07-041, hR07-045, hR07-046, hR07-047, hR07-048, hR07-053, hR07-054, hR07-054.1, hR07-054.2, hR07-062, hR07-062.1, hR07-062.2, hR07-063, hR07-080, hR07-088, hR07-089, hR07-095, hR07-095.1, hR07-097, hR07-098, hR07-108, hR07-108.1, and hR07-123.

36. The method of screening for anticancer activity according to claim 33, wherein the drug candidate is a G-protein coupled receptor antagonist and further wherein the nucleic acid sequence is selected from the group consisting of hR07-012, hR07-025, hR07-050, hR07-050.1, hR07-050.2, and hR07-050.3.

37. The method of screening for anticancer activity according to claim 33, wherein the drug candidate is a growth factor antagonist and further wherein the nucleic acid sequence is selected from the group consisting of hR07-083, hR07-092, hR07-093, and hR07-106.

38. The method of screening for anticancer activity according to claim 33, wherein the drug candidate is a serine-threonine kinase antagonist and further wherein the nucleic acid sequence is selected from the group consisting of hR07-060, hR07-061, hR07-067, hR07-115, and hR07-127.

39. The method of screening for anticancer activity according to claim 33, wherein the drug candidate is a tyrosine kinase antagonist and further wherein the nucleic acid sequence is selected from the group consisting of hR07-004, hR07-006, hR07-008, hR07-055, and hR07-055.1.

40. A method for detecting cancer associated with expression of a polypeptide in a test cell sample, comprising the steps of:

(i) detecting a level of expression of at least one polypeptide selected from the group consisting of hP07-001 through hP07-128 according to Tables 1-128, or a fragment thereof; and

(ii) comparing the level of expression of the polypeptide in the test sample with a level of expression of polypeptide in a normal cell sample, wherein an altered level of expression of the polypeptide in the test cell sample relative to the level of polypeptide expression in the normal cell sample is indicative of the presence of cancer in the test cell sample.

41. A method for detecting cancer associated with expression of a polypeptide in a test cell sample, comprising the steps of:

(i) detecting a level of activity of at least one polypeptide selected from the group consisting of hP07-001 through hP07-128 according to Tables 1-128, or a fragment thereof, wherein said activity corresponds to at least one activity for the polypeptide listed in Table 129; and

(ii) comparing the level of activity of the polypeptide in the test sample with a level of activity of polypeptide in a normal cell sample, wherein an altered level of activity of the polypeptide in the test cell sample relative to the level of polypeptide activity in the normal cell sample is indicative of the presence of cancer in the test cell sample.

42. A method for detecting cancer associated with the presence of an antibody in a test serum sample, comprising the steps of:

(i) detecting a level of an antibody against an antigenic polypeptide selected from the group consisting of hP07-001 through 07-128 according to Tables 1-128, or antigenic fragment thereof; and

(ii) comparing said level of said antibody in the test sample with a level of said antibody in the control sample, wherein an altered level of antibody in said test sample relative to the level of antibody in the control sample is indicative of the presence of cancer in the test serum sample.

43. A method for screening for a bioactive agent capable of modulating the activity of a CA protein (CAP), wherein said CAP is encoded by a nucleic acid comprising a nucleic acid sequence selected from the group consisting of the polynucleotide sequences hR07-001 through hR07-128 shown in Tables 1-128, said method comprising:

a) combining said CAP and a candidate bioactive agent; and

b) determining the effect of the candidate agent on the bioactivity of said CAP.

44. The method of screening for the bioactive agent according to claim 43, wherein the bioactive agent affects the expression of the CA protein (CAP).

45. The method of screening for the bioactive agent according to claim 43, wherein the bioactive agent affects the activity of the CA protein (CAP), wherein such activity is selected from the activities listed in Table 129.

46. The method of screening for the bioactive agent according to claim 43, wherein the bioactive agent is an inhibitor of transcription and further wherein the nucleic acid sequence is selected from the group consisting of hR07-021, hR07-041, hR07-045, hR07-046, hR07-047, hR07-048, hR07-053, hR07-054, hR07-054.1, hR07-054.2, hR07-062, hR07-062.1, hR07-062.2, hR07-063, hR07-080, hR07-088, hR07-089, hR07-095, hR07-095.1, hR07-097, hR07-098, hR07-108, hR07-108.1, and hR07-123

47. The method of screening for the bioactive agent according to claim 43, wherein the bioactive agent is a G-protein coupled receptor antagonist and further wherein the nucleic acid sequence is selected from the group consisting of hR07-012, hR07-025, hR07-050, hR07-050.1, hR07-050.2, and hR07-050.3.

48. The method of screening for the bioactive agent according to claim 43, wherein the bioactive agent is a growth factor antagonist and further wherein the nucleic acid sequence is selected from the group consisting of hR07-083, hR07-092, hR07-093, and hR07-106.

49. The method of screening for the bioactive agent according to claim 43, wherein the bioactive agent is a serine-threonine kinase antagonist and further wherein the nucleic acid sequence is selected from the group consisting of hR07-060, hR07-061, hR07-067, hR07-115, and hR07-127.

50. The method of screening for the bioactive agent according to claim 43, wherein the bioactive agent is a tyrosine kinase antagonist and further wherein the nucleic acid sequence is selected from the group consisting of hR07-004, hR07-006, hR07-008, hR07-055, and hR07-055.1.

51. A method for diagnosing cancer comprising:

a) determining the expression of one or more genes comprising a nucleic acid sequence selected from the group consisting of the sequences outlined in Tables 1-128, in a first tissue type of a first individual; and

b) comparing said expression of said gene(s) from a second normal tissue type from said first individual or a second unaffected individual;

wherein a difference in said expression indicates that the first individual has cancer.

52. A method for treating cancers comprising administering to a patient an inhibitor of a CA protein (CAP), wherein said CAP is encoded by a nucleic acid comprising a nucleic acid sequence selected from the group consisting of the sequences outlined in Tables 1-128.

53. The method for treating cancers according to claim 52, wherein the inhibitor of a CA protein (CAP) binds to the CA protein.

54. The method for treating cancers according to claim 52, wherein the inhibitor of a CA protein (CAP) is an inhibitor of transcription and further wherein the CAP sequence is encoded by a nucleic acid comprising a nucleic acid sequence selected from the group consisting of hR07-021, hR07-041, hR07-045, hR07-046, hR07-047, hR07-048, hR07-053, hR07-054, hR07-054.1, hR07-054.2, hR07-062, hR07-062.1, hR07-062.2, hR07-063, hR07-080, hR07-088, hR07-089, hR07-095, hR07-095.1, hR07-097, hR07-098, hR07-108, hR07-108.1, and hR07-123.

55. The method for treating cancers according to claim 52, wherein the inhibitor of a CA protein (CAP) is a G-protein coupled receptor antagonist and further wherein the CAP sequence is encoded by a nucleic acid comprising a nucleic acid sequence selected from the group consisting of hR07-012, hR07-025, hR07-050, hR07-050.1, hR07-050.2, and hR07-050.3.

56. The method for treating cancers according to claim 52, wherein the inhibitor of a CA protein (CAP) is a growth factor antagonist and further wherein the CAP sequence is encoded by a nucleic acid comprising a nucleic acid sequence selected from the group consisting of hR07-083, hR07-092, hR07-093, and hR07-106.

57. The method for treating cancers according to claim 52, wherein the inhibitor of a CA protein (CAP) is a serine-threonine kinase antagonist and further wherein the CAP sequence is encoded by a nucleic acid comprising a nucleic acid sequence selected from the group consisting of hR07-060, hR07-061, hR07-067, hR07-115, and hR07-127.

58. The method for treating cancers according to claim 52, wherein the inhibitor of a CA protein (CAP) is a tyrosine kinase antagonist and further wherein the CAP sequence is encoded by a nucleic acid comprising a nucleic acid sequence selected from the group consisting of hR07-004, hR07-006, hR07-008, hR07-055, and hR07-055.1.

59. An antibody that preferentially binds to a CA protein (CAP) that is expressed on a cell surface, wherein the CA protein selected from the group consisting of hP07-003, hP07-014, hP07-035, hP07-042, hP07-044, hP07-051, hP07-064, hP07-067, hP07-071, hP07-075, hP07-078, hP07-081, hP07-083, hP07-092, hP07-093, hP07-102, hP07-106, hP07-112, hP07-120, and hP07-128.

60. The antibody according to claim 59, wherein the antibody is a monoclonal antibody.

61. The monoclonal antibody according to claim 60, wherein the monoclonal antibody binds to the extracellular domain of the CA protein.

62. The monoclonal antibody according to claim 60, wherein the monoclonal antibody binds to at least one human cancer cell line.

63. The monoclonal antibody according to claim 60, wherein the monoclonal antibody is prepared by a process comprising:

(a) providing a hybridoma capable of producing the monoclonal antibody; and

(b) culturing the hybridoma under conditions that provide for the production of the monoclonal antibody by the hybridoma.

64. A hybridoma that produces the monoclonal antibody according to claim 60.

65. The antibody according to claim 59, wherein the antibody is a humanized antibody.

66. The antibody according to claim 59, wherein the CAP is expressed on a cancer cell surface but not on a normal cell surface.

67. The antibody according to claim 59, wherein the CAP is differentially expressed on a cancer cell surface relative to a normal cell surface.

68. The antibody according to claim 59, wherein the antibody is linked to a therapeutic agent.

69. The antibody according to claim 60, wherein the antibody is linked to a therapeutic agent.

70. A pharmaceutical composition comprising the antibody according to claim 59 and a pharmaceutically acceptable excipient.

71. A pharmaceutical composition comprising the antibody according to claim 68 and a pharmaceutically acceptable excipient.

72. A pharmaceutical composition comprising the antibody according to claim 69 and a pharmaceutically acceptable excipient.

73. A kit for detecting cancer cells comprising the antibody according to claim 59.

74. A kit for detecting cancer cells comprising the monoclonal antibody according to claim 60.

75. A method for detecting a presence or an absence of cancer cells in an individual, the method comprising:

contacting cells from the individual with the antibody according to any of claims 59 or 60;

and detecting a complex of a CAP from the cancer cells and the antibody,

wherein detection of the complex correlates with the presence of cancer cells in the individual.

76. A method for inhibiting growth of cancer cells in an individual, the method comprising: administering to the individual an effective amount of a pharmaceutical composition according to any of claims 70, 71, or 72.

77. A method for delivering a therapeutic agent to cancer cells in an individual, the method comprising: administering to the individual an effective amount of a pharmaceutical composition according to any of claims 70, 71, or 72.